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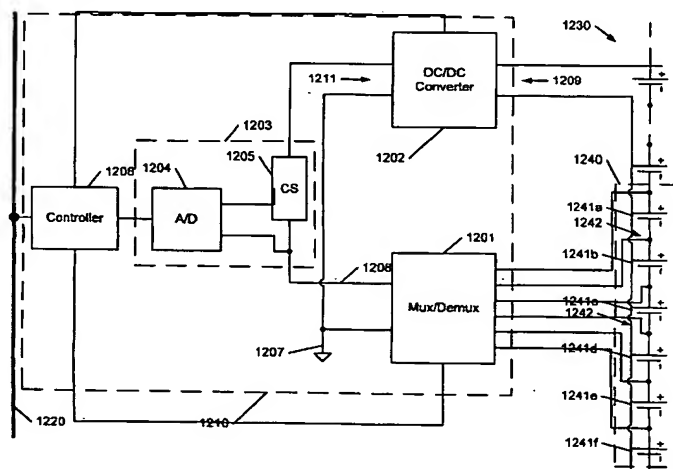
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(54) Title: MODULAR BATTERY MANAGEMENT APPARATUS WITH CELL SENSING AND ENERGY REDISTRIBUTION CAPABILITIES



(57) Abstract: A battery management system (1210) includes a sensing module (1203), a feeding module (1202), a control module (1206), and a common line (1207, 1208) adapted for connection to a battery (1230) when in use. In some embodiments, a battery management apparatus (1210) for managing a substring of cells (1241) in a string of cells (1230) includes a DC bus (1208), a multiplexer/demultiplexer circuit (1201) operative to selectively couple nodes of the substring of cells to the DC bus, a DC/DC converter circuit (1202) having a first port (1209) configured to be coupled across a plurality of cells of the string and a second port (1211) coupled to the DC bus (1208), the DC/DC converter operative to transfer energy between the first and second ports, a sensor circuit (1205) coupled to the DC bus, and a controller circuit (1206) configured to connect to a communications bus (1220) and operatively associated with the multiplexer/demultiplexer circuit, the DC/DC converter and the sensor circuit.